

REMARKS

The application is believed to be in condition for allowance for the reasons set forth below.

Claims 1 and 3-14 are pending in the application.

Claims 1 and 3-14 were rejected under 35 USC 103(a) as being unpatentable over ODA JP 2001-276555 in view of HAUG 6,309,769. That rejection is respectfully traversed.

Claim 1 recites a separation membrane including a material having an oxygen/nitrogen separation coefficient more than one disposed between a cathode electrode and a passage (for feeding air to the cathode electrode), wherein the separation membrane covers an entire surface of the cathode electrode.

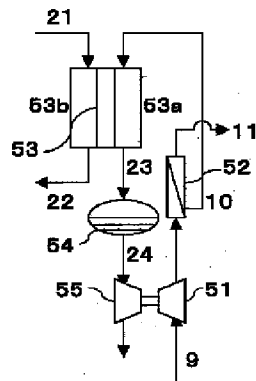
As recognized in the Official Action, ODA does not disclose that the separation membrane covers an entire surface of the cathode electrode as recited in claim 1.

HAUG is offered for this feature, with the Official Action concluding that it would have been obvious to modify ODA in view of HAUG to meet claim 1.

However, even if one of ordinary skill in the art were to consider the proposed combination of references in the first instance, the invention of claim 1 would not result.

ODA is directed to a fuel cell system including a fuel cell 53 and a deoxygenation membrane module 52 having an outlet port connected to the fuel cell 53 via line 10 as seen, for example, in Figure 4, reproduced below.

[Drawing 4]



HAUG discloses a fuel cell stack that might include a CO filter layer 400 at a cathode side 170 (see Figure 4).

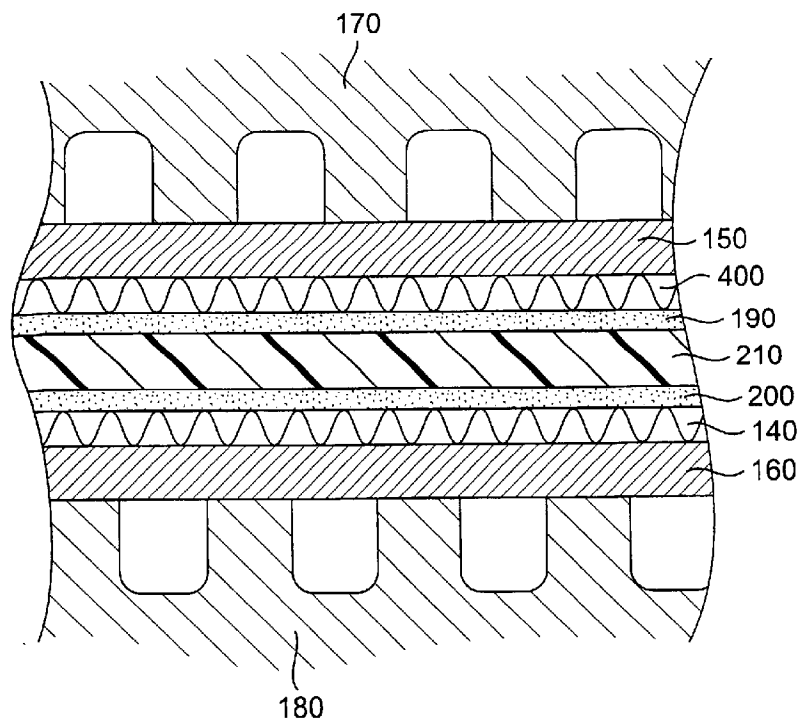


FIG. 4

In HAUG, fuel flows to the cathode side 170 from a cathode gas inlet line 70 (see Figure 1, reproduced below).

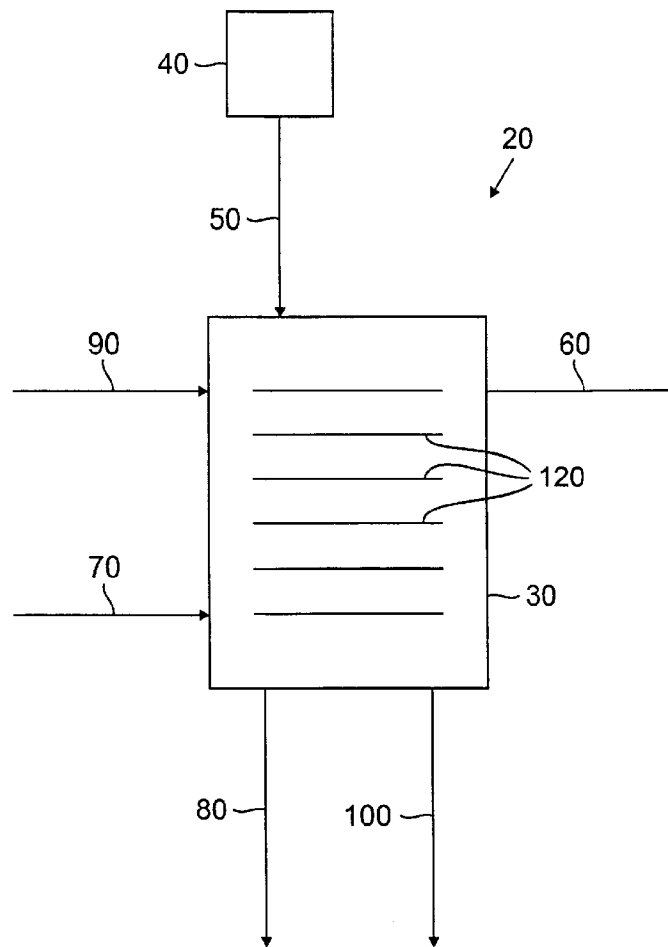


FIG. 1

In order to increase cell performance in ODA, one of ordinary skill in the art might consider adding a CO membrane such as membrane 400 of HAUG to the cathode side 53a of fuel cell 53.

However, HAUG does not disclose using an oxygen/nitrogen separation membrane instead of the CO membrane and thus, HAUG does not suggest placing an oxygen/nitrogen

separation membrane so as to cover an entire surface of the cathode electrode.

Rather, HAUG, similar to ODA, has a supply inlet 70 connected to the fuel cell 30. Thus, as set forth above, one of ordinary skill in the art might consider a CO membrane at the cathode side of the fuel cell 30 in order to increase cell performance. However, there is no suggestion to modify the inlet to the fuel cell 53 of ODA and such inlet would remain as a line 10 connecting the module 52 with fuel cell 53.

Accordingly, even if one of ordinary skill in the art were to consider the proposed combination of references, the invention of claim 1 would not result.

Moreover, one of ordinary skill in the art would not have considered the proposed combination of references in the first instance because the device of ODA does not appear to be subject to CO contamination.

The reason that HAUG uses a CO membrane is to prevent CO contamination (see column 3, lines 5-20). The device of HAUG is subject to CO contamination because HAUG uses a reformat having 50 ppm CO (40% H₂, 25% CO₂, 2% O₂ and balance N₂).

ODA uses a hydrogen containing gas at 21 (see Figure 4), but never mentions CO. Thus, one of ordinary skill in the art would understand that CO is not an issue in ODA and need not be addressed. Accordingly, it would not have been obvious to modify ODA in view of HAUG to include a CO membrane.

Further, ODA teaches preferred embodiments (Figures 5, 6, 7 and 8) wherein a compressor 51 or a blower 56 are downstream of the deoxygenation membrane module 52 in order to improve the efficiency of the fuel cell (see paragraph [0053]).

In view of this, ODA would not be modified in the manner suggested because ODA implicitly teaches away from the suggested configuration in favor of a compressor or blower downstream of the deoxygenation membrane module 52.

For the reasons set forth above, it would not have been obvious to combine the proposed combination of references in the manner suggested to meet claim 1.

Independent claims 8 and 14 include similar features as to the separation membrane and the analysis above regarding claim 1 as to this feature also applies to claims 8 and 14.

The dependent claims are believed to be patentable at least for depending from an allowable independent claim.

In view of the foregoing remarks, it is believed that the present application is in condition for allowance. Reconsideration and allowance are respectfully requested.

The Commissioner is hereby authorized in this, concurrent, and future replies, to charge payment or credit any overpayment to Deposit Account No. 25-0120 for any additional fees required under 37 C.F.R. § 1.16 or under 37 C.F.R. § 1.17.

Respectfully submitted,

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